

## Limestone In Its Infant Days

**D**OWN along the Mason and Dixon line, between Maryland and Pennsylvania, the traveller was once able to find rows of limestone monuments, a peculiar limestone, made up of what the geologist calls "tiny calcareous concretions," resembling fish roe. The scientists called it Jurassic limestone because of the extensive development of rocks of this age in the Jura Mountains. It is this stone which formed a basis for the late Jurassic deposits of lithographic limestone. Professor Edward W. Berry, of Johns Hopkins University, discloses an interesting picture of the geographic events of those early days in an article on "The Jurassic Lagoons of Solnhofen" in "The Scientific Monthly." Solnhofen is the scene of the lithographic stone quarries of South Germany.

"During the long ages of the Triassic period of the Paleozoic highlands of Europe had been very largely worn away by the slow processes of erosion, and the Jurassic history is in the main one of the shallow seas gradually expanding over a land surface of low relief, and culminating in the almost complete flooding of the continent. North America, on the contrary, presents a striking contrast to Europe, for it is only in the Pacific Coast region, and in Alaska, Texas and Mexico, that any marine Jurassic sediments have been discovered.

The Jurassic seas of Europe were pre-eminently shallow and warm. They swarmed with life of all kinds, and their sediments were predominantly calcareous.

The Solnhofen deposits came at a time just subsequent to the maximum extension of Jurassic seas which had occurred in the immediately preceding times.

This stage of the upper Jurassic is known as the Portlandian (from Portland, England) or Bimolian (from Bononia, the old name for Bologna, France).

## A Shallow, Open Sea Covered Russia

"Europe was an archipelago at that time and the East Indies of to-day. The largest island, probably of a much more irregular outline than I have indicated, embraced Scandinavia, Finland, and Northwestern Russia. No traces of Portlandian sediments have been found in this vast region except around its margin. A shallow open sea appears to have covered most of Russia, broken by large islands in the Caucasus, and in Padolia, Kiev, Bessarabia, Kherson and Taurida—that is to say, Southwestern Russia and the Rumanian border. Asia Minor was above the sea, and it is uncertain whether this last land mass extended to the northwest, or whether parts of Macedonia, Bulgaria, Serbia and Hungary constituted another large island. Ireland, Scotland and Western England were above the sea, as was most of Spain and the site of the Pyrenees. There were smaller islands in the Alpine region and elsewhere in Italy, and a large island occupied the Western Mediterranean, the latter sea reaching the Atlantic across Southern Spain on the north and Morocco on the south.

"The ancient rock-masses of Brittany and the Auvergne in France were land and it is uncertain whether or not the two were united across the Loire Valley or whether the Atlantic fauna reached the Paris Basin across this area shown by broken lines on the map. Another large island extended from Norfolk across Flanders into Germany, and here also the map indicates by broken lines the uncertainty as to whether or not this island was connected with or separated from the island or islands on the site of Swabia, Franconia and Northern Bavaria. The presence of traces of the Atlantic fauna in Germany has suggested that this fauna migrated in the northeastern direction.

"Along the southern border of this Swabian, Franconian, Bavarian island or islands there were reefs, extending southward into France, which prevented the mingling of the Mediterranean fauna of the Danube Basin and Dauphiné with the Atlantic fauna of the Paris Basin. There were other extensive reef areas in the Alpine region, in Provence, and elsewhere at this time.

## A Hundred Varieties of Insects Perished

"Upward of 500 different kinds of animals have been recorded from the lithographic stone, but this is somewhat swollen by the true German thoroughness, that has given every problematical scrap a binomial Latin name. Despite this, the lists are impressively long and marvellous in the variety of life that is represented. Insects to the number of over 100 kinds were blown upon the mud flats or perished in the waters; sometimes we have preserved in stone the traces of the struggles of some mired insect in its efforts to escape. There are no freshwater forms of life. Fishes to the number of nearly 150 kinds, mainly ganoids, have been discovered in these rocks. The crustaceans, which number over 70 varieties, are mainly lobster-like forms. The ammonites number 13 species, distributed among six genera, and there were large numbers of the Jurassic ancestors of our modern squids or cuttlefishes. These number 17 species distributed among 8 genera, and some of them were very common individually and undoubtedly lived in the lagoons. Very often more or less of their soft bodies as well as their vestigial shells and pens were preserved as, for example, in Ammonoites, in which the ink bag and the ten arms with their double rows of suckers were fossilized. There were many sea worms, free-swimming crinoids (combustibles) and brittle stars, and even such perishable and aqueous objects as jellyfishes were preserved with great fidelity in the fine-grained, ooze, where they were stranded by the retreating tide. Bottom dwellers of the sea are mostly absent and are represented almost entirely by molluscs that were accidentally washed into the lagoon or voided by fishes. A single dinorthis, evidently bogged, has come to light."



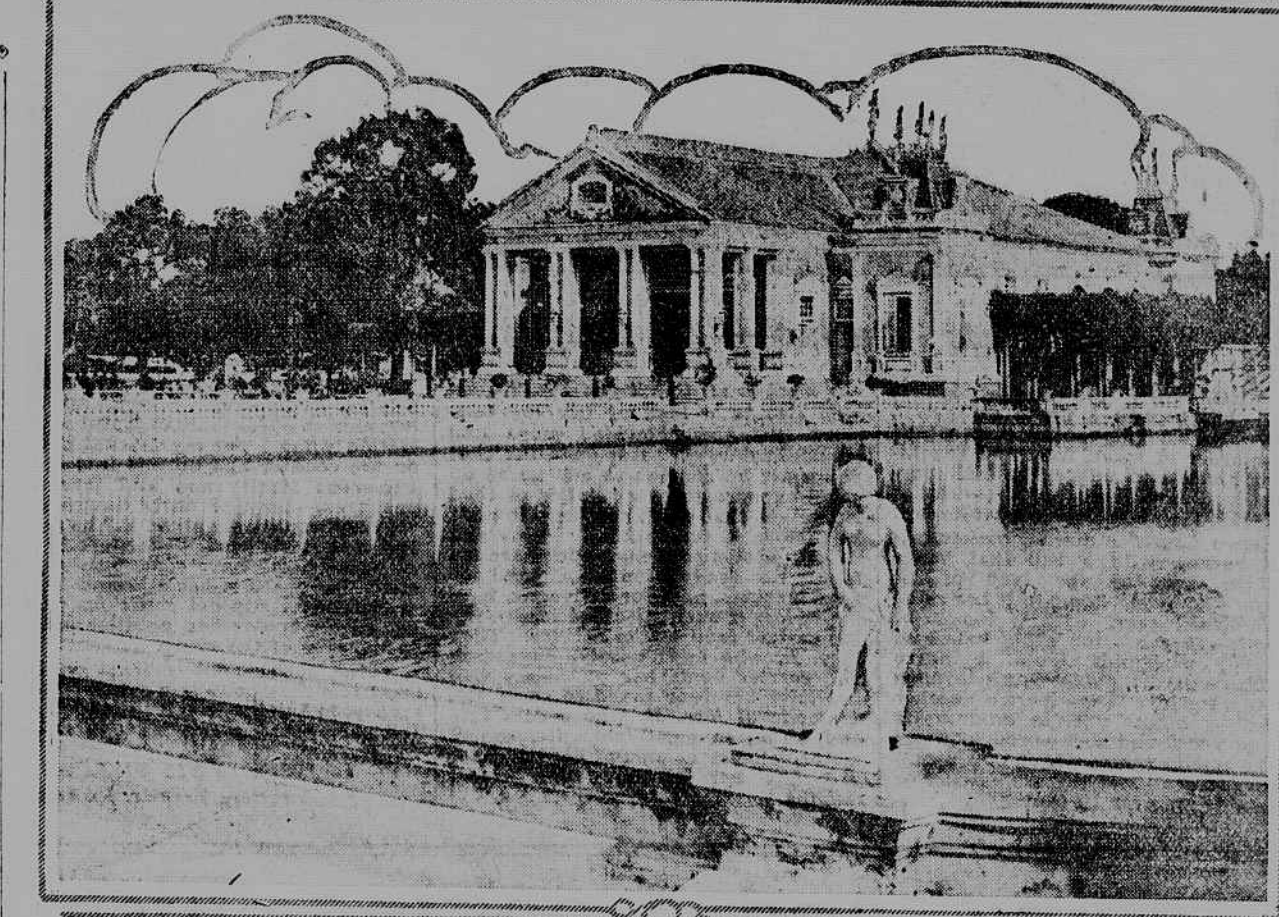
Anteroom in the Palace

By Frederic Dean

**S**IAM and the United States have much in common. Diametrically opposed to each other in form of government—the United States being ruled by the most advanced form of democracy and Siam representing one of the oldest as well as one of the most absolute of monarchies—both regard themselves as "free" countries. The Siamese name for its homeland is "Muang Thai," "The Land of the Free"; its present ruler is the most democratic despot that ever sat upon an Eastern throne; the country is thriving under advantageous taxation laws, and is drawing to it many people from Franco-Indo-China on the east and from British-India on the west. Both of these adjacent states are ruled by foreigners, governors from France and England, and require a much larger budget for their maintenance than they would be ruled by natives.

Siam is governed by a wise young monarch, who knows his people and loves them; who has lived long enough in Europe—he spent a third of his life in England and France—to understand the needs of his 9,000,000 subjects from the west, and who is welding upon the old best from the new. Himself a graduate from Christ Church College, Oxford, he has drawn to his court other college men—from Cambridge, from Harvard, from Yale—all staunch Siamese and all working with their sovereign for the furtherance of the cause of the "free." This progressive little monarch has also surrounded himself with a body of foreign experts—experts in international law and diplomacy. For counsel he has an American, and for other advisers English and French, Portuguese and Italian in various capacities, to each of whom is given certain duties and powers in assisting the king in his dealings with his foreign population.

On the 22d of July of last year Siam entered the war. In October last her king adopted a new state flag. For centuries the White Elephant on a red ground had



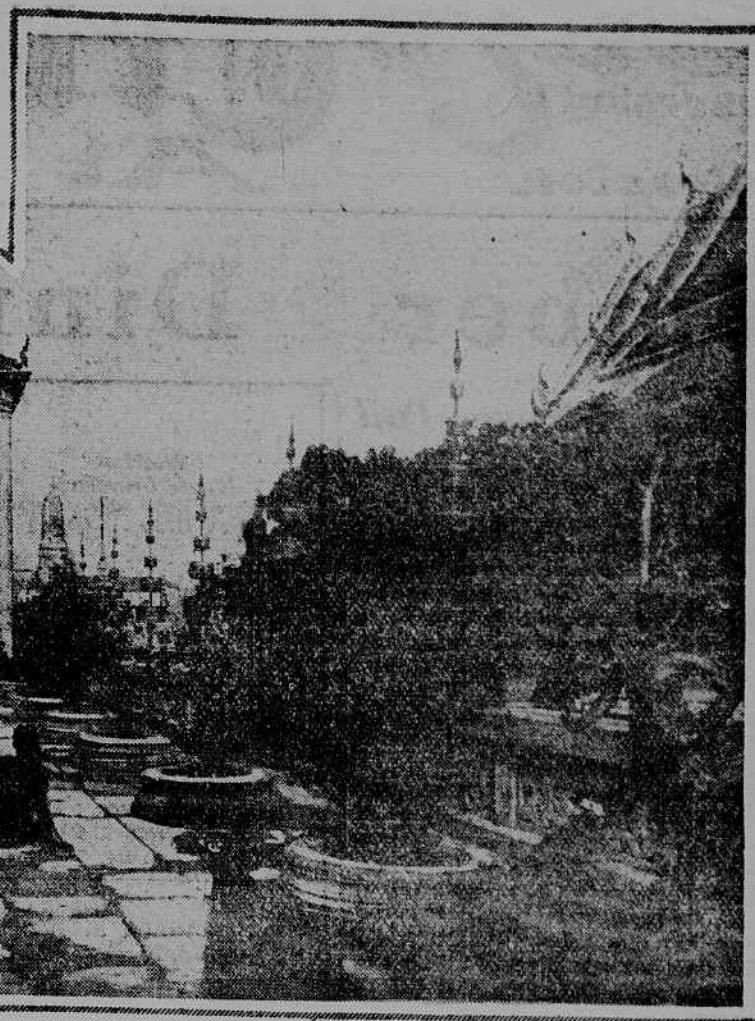
Dusit Palace, in the centre of Siam's capital city, Bangkok

been the authorized standard of the country. This White Elephant means much to the Siamese. It is the sign of sovereignty. Its use upon the standard of Siam meant that Siam had gained the right to wear it on her banner because of victories over all adversaries. After entering the war His Majesty thought that the time had come

for his country to present to its allies a banner that meant a union with them in a common cause. So Siam raised a tri-color, and this new red, white and blue standard, that was particularly prominent during the recent Fourth Liberty Loan drive, has very appropriately coupled Siam with her allies in the battle for world righteousness.

It has been noticed that this new emblem of Siamese sovereignty is patterned not upon the flag of England or of France, but upon the Stars and Stripes of the United States, and it is interpreted as an expression of a love for and an admiration of the United States that date back for years. When the grandfather of the pres-

## Siam and Its Fallen White Elephant



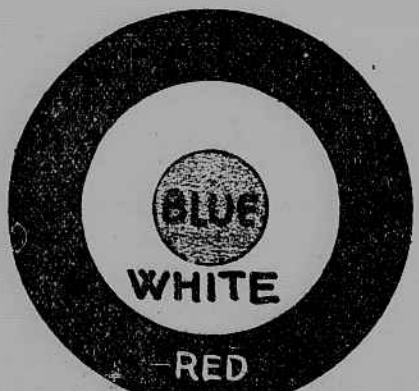
"Wat Phra Keo"

Detail of the southeastern corner of a temple, the most gorgeous in Bangkok

ent king was on the throne—Maha Mongkut was his name—he had a chamber in his palace devoted to "the other land of the free," America. Upon the walls of this chamber were portraits of all the presidents of the United States, from Washington down. They were not all works of art—some were mere daubs—but they were expressions of an admiration that was given to no other country. Old Mongkut used to say that he "loved America best of all countries" and that he "patterned a good deal after her ways of doing things." His first ambassador sent to a foreign country was sent to the United States; the first ambassador to Siam came from the United States. King Chulalongkorn, father of the present ruler and son of Mongkut, was never permitted to visit Washington and present his compliments to the chief ruler of the country that both his father and he loved so dearly; but he urged his son, the Crown Prince, to "be sure to visit America and, in person, present the compliments of Siam to the American ruler—a pleasure that has been denied me." Prince Vajiravudh's visit is well remembered. He spent some time in this country and made friends everywhere. Upon reaching home he resolved to "never lose sight of what America was doing" and to engrave upon his home institutions as many Americanisms as would fit into his eastern scheme of rule.

In both Europe and America he had met and admired many American women. His father and his father's father and all of his ancestors for 2,500 years had been the heads of large households. Under the old order every man in Siam was permitted to marry as many wives as he could support; the king's household was practically unlimited. The present king is the first bachelor to sit upon the Siamese throne. He has declared that he will marry but one wife, and, so it is said, she is to be an American girl.

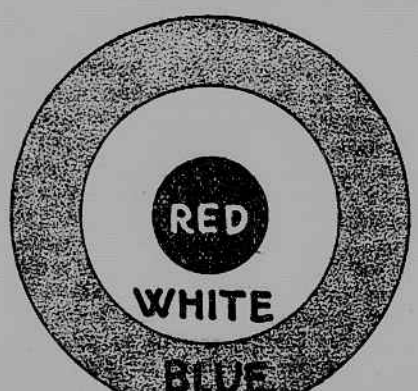
## The Sign of the 'Plane



French



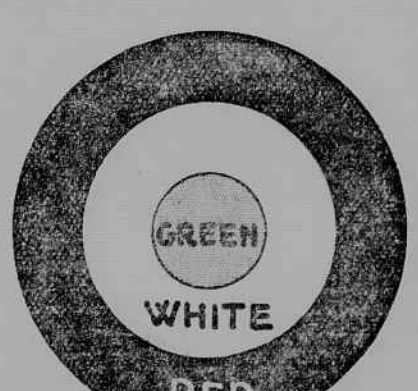
Belgian



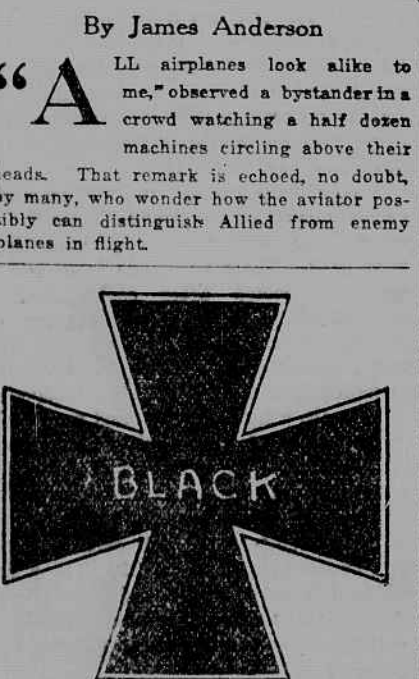
English



United States



Italian



The Proposed German Cross

By James Anderson

"**A**LL airplanes look alike to me," observed a bystander in a crowd watching a half dozen machines circling above their heads. That remark is echoed, no doubt, by many, who wonder how the aviator possibly can distinguish Allied from enemy 'planes in flight.

The answer is that the Allies use a conspicuous concord on their 'planes, so very different from the black cross of the Central Powers that the well trained aviator even in the heat of the conflict cannot mistake it. The Maltese cross has been used by Germany on her 'planes since the beginning

of the war and thus has become so well known to Allied aviators that it is the simplest thing in the world for them to identify the Hun machines.

German military authorities have realized that this very distinctive design made their machines an easy mark for anti-aircraft gunners and was thus operating to their disadvantage; and not long ago the Allies received a report to the effect that the Central Powers were considering the use in the near future of a new design, a square cross. One of the reasons for this contemplated change, it was said, was that the new design is so similar to the Red Cross that Germany thought it would afford protection to her aviators.

In some of the pictures of American 'planes the design displayed shows a white

star in the centre. At a distance it was discovered that it was possible to confuse this design with the Maltese cross of the Central Powers. For fighting 'planes this design was therefore abandoned and has been used only on training 'planes in this country.

All the Allies use a similar marking of three concentric circles on their airplanes, a different color scheme for each nation. On the machines themselves this distinguishing feature is very apparent, but in photographs it is difficult to tell one from another.

Colors, when photographed, have an awkward way of acquiring unexpected tonal values. Blue, for instance, becomes almost white, red appears almost black, and yellow also very dark. It might be

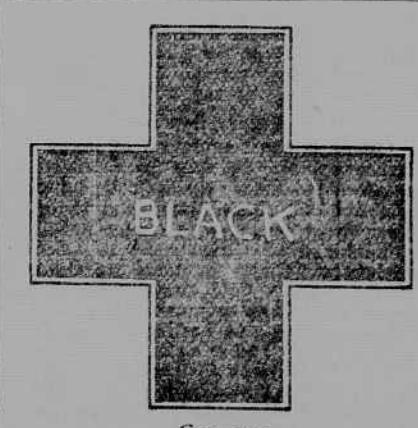
impossible for any one but an expert to distinguish between the photographed airplane mark of the United States and that of France. The marks of France and Italy are even more alike, both having the red outer circle and white middle ring.

Our 'planes can be distinguished, however, in war photographs by the dark outer ring of black, red in the original design, the white centre and the slightly shaded ring of blue between the centre and the outer ring.

In the French 'plane the outer ring is red, the inner one white and the centre blue. Between France and Italy the distinction is not so apparent on the photograph. The outer rings are identical. The difference lies in the fact that the green centre of the Italian concord comes out slightly

darker than the blue centre of the French. England and Belgium, on the other hand, are quite distinct. England is the only one having a very dark centre and very light outer rings, and Belgium is merely a dark smudge, with black centre, the yellow and red circles blending.

It must not be thought for a moment, however, that the concord is the only markings the fliers look for to identify friend or foe. The concentric circles are



German

from the frequency with which we changed defections and elevations. And then came the order to depress our muzzles, and we fired at bridges.

"The Germans started to retreat yesterday morning, and we played on bridges again, hitting one big bridge when it was full of Hun artillery. Infantrymen coming back say the Germans ran around in swarms with white flags. The French say the Americans took very few prisoners, however. We placed a curtain of fire to cut off their retreat, and I understood prisoners were taken; however, on all sides, late reports last night from headquarters said that our infantry followed them across the river."

## A Visit to the German Trenches

By Lieut. J. E. Roscamp, R. E.

**I**T WAS shortly after midnight and very dark when two small parties, about thirty strong, crept through the "sallyport" under the parapet and so reached "No Man's Land."

Our own barbed wire entanglements had already been prepared for the expedition, and, with the exception of having to wade through the icy water in the "sallyport," we were clear of our entanglements with little difficulty.

Our guns had been bombarding the Hun's front line heavily during the day, and it had been noticed that the constant flow of water from a pump over their parapet had ceased, showing that the pump had been broken down by our fire.

We were well aware that any breakdown of this description would necessarily quickly flood their trenches, and it was thought that in all probability they would be compelled to abandon that part of their front line trench and thus make it possible for us to carry out a reconnaissance and obtain valuable information concerning mining operations and the like; also, we should be able to visit the various dugouts and collect what papers and notices, if any, remained.

The distance between the two front lines at this point was about 100 yards, and the ground had been so disturbed with mining operations and the blowing up of large craters, and also by the almost incessant bursting of heavy shells, that there were deep holes all over it. Travelling in the pitch darkness was therefore not a simple matter. One of the principal features of the reconnaissance by night is to preserve absolute quiet—which is very difficult over ground such as I have described.

## The Enemy May Be Out on a Like Expedition

There is, too, the ever present danger of the enemy being out upon a similar expedition, which necessitates constant halts to listen; while at frequent intervals this space between the lines is illuminated by flare lights and rockets, which make it imperative to remain motionless or have one's presence detected immediately by the sentries. The sharp crack of a rifle or the whizzing of bullets from a machine gun is proof that some one has been "spotted."

So, after some twenty minutes or so, now walking, now crawling, now standing and now lying motionless, stumbling down holes and tripping over fallen trees or their branches, or over still more of the everlasting barbed wire, we reached the German entanglements, and, with the aid of "snipers," soon cut a passage through and were crawling slowly and stealthily up their parapet.

No sound was heard except now and again the splash of some loose clay falling into the water or the splash of some water rat, frightened at our presence, as it dived into the water in the trenches to safety.

Presently we divided into two parties, one to go to the right and the other to the left. Two good trusty fellows went on about ten yards ahead of the rest in each case, followed by the officer in charge, revolver in hand, at the head of his men, who carried their rifles with bayonets fixed and, of course, loaded, ready for any emergency.

The water in the trenches was well above the waist and bitterly cold.

My own particular business was to keep a lookout for mine shafts or tunnels and to note their position in order that they might be dealt with on a subsequent occasion. This took me sometimes many yards behind the front line peering into dugouts and dark corners where the mine top might possibly be secreted, and my impression is that the boasted Boche dugouts and trenches were no better than ours, if, indeed, they were so good.

We had travelled some three or four hundred yards to the right, and the other party about 200 yards to the left, when they came upon a party of five Germans in a dugout.

A rifle report cracked out and one of our men was hit, but they quickly avenged him by dispatching three of the Boches to the next world and capturing one, while the fifth got away.

## Fighting Through Their Own Barbed Wire

Immediately hundreds of flare lights went up from the German second line, followed by the splashing of water as men hurried forward to their front line to see what had happened. So we had to make our escape as quickly and silently as we could.

With two others I had been some way behind the parapet, and by the time we reached the barbed wire the Huns were peppering away with their machine guns.

We could not find a place to get through the wire, and had just to take pot luck and go straight for it, though we knew we had to struggle and fight our way through an entanglement of from fifteen to thirty feet, made of wire interwoven in a most evil mesh. However, we struggled on as best we could, helping each other, and after what seemed an eternity broke through with many cuts and scratches, but lost nothing except a few pieces of coats and breeches.

Our difficulties then increased. Having turned around so many times to get through the wire, we could not hit on the direction of our own trenches for a few moments, and had to lie down for some little time watching the flare lights going up before we were satisfied by some outstanding object of the way we had to go; then it was not many moments before we were at our own barbed wire.

Here, again, we had difficulty finding a passage through, which was rendered all the more trying by the constant whizzing of the bullets from enemy machine guns about our ears.

So we crawled along in front of the wire, hoping to find an entrance, when all at once all three of us went headlong into a deep cutting filled with water. It was a deep cut that had been cut out and cleverly covered with branches and twigs, so that it was not discernible from the ground, and was about nine feet down; but although we got a good ducking we managed to get under the entanglements and back into our own trenches.

## Letters in Khaki

**T**HE following letter from Robert David, son of Edward T. David, of Wyoming, gives a vivid picture of some of the intense fighting which marked the opening Allied drive near Château Thierry:

"Dear Father and Mother: You probably know from the casualty list that the 148th has been in the biggest battle this year, and old Battery B proved the trump card of the whole deck. The hardest fighting took place, it seems from the papers, in the sector which my battalion covers, and for one day and one night 'B' did the work for the battalion, as 'A' was shifting its trails. We

worked day and night. The maximum number of shells which should be fired from one of our guns is 100, and we fired close to 150. Water spluttered off with no effect, the guns were so hot. The seventh shot which we fired hit a great ammunition dump, which burned for two days. The French had been looking for this dump for three weeks. When the battle commenced in our sector it was about 1 o'clock at night.

"The whole horizon flashed with spurts, flares and rockets, the noise sounding like the kicking of about a hundred carloads of Texas steers. We shelled towns, ammunition dumps and cross roads, evidently getting our targets without difficulty, judging

from the frequency with which we changed defections and elevations. And then came the order to depress our muzzles, and we fired at bridges.

"The Germans started to retreat yesterday morning, and we played on bridges again, hitting one big bridge when it was full of Hun artillery. Infantrymen coming back say the Germans ran around in swarms with white flags. The French say the Americans took very few prisoners, however. We placed a curtain of fire to cut off their retreat, and I understood prisoners were taken; however, on all sides, late reports last night from headquarters said that our infantry followed them across the river."